



Meadowfoam Fills a Niche

Alternative crop yields biodegradable oil for cosmetics and industrial uses.

A commercial field of meadowfoam flourishes in western Oregon's Willamette Valley.

STEVE DODRILL, OSU

Far away from any department store cosmetics counter grows an underused ingredient that promises to give us smoother, younger looking skin. That ingredient is meadowfoam oil.

Mainly grown in Oregon, meadowfoam is a 10- to 18-inch-tall flowering plant. Grass-seed farmers who are no longer allowed to burn their fields are now planting meadowfoam as an alternative crop on some of that acreage.

One incentive for growing meadowfoam is that U.S. consumers spend about \$27.1 billion each year on beauty products. Meadowfoam seeds give up a light, high-quality natural oil that can be used by the cosmetics industry as an emollient to soften or smooth the skin.

"Because of the better moisturizing properties of these compounds, I expect they will be highly valued by the cosmetics industry," says ARS chemist Terry A. Isbell.

The oil also has potential industrial applications as a biodegradable lubricant. Isbell and other researchers at ARS' National Center for Agricultural Utilization Research in Peoria, Illinois, have received one patent and applied for three more on new

meadowfoam oil compounds and the processes for making them.

Currently, more acreage is being planted in meadowfoam. That's why applications for the oil are being developed. The ARS new crops research is providing the information needed to make meadowfoam an economically viable alternative crop.

Just 3 years ago, meadowfoam growers were perplexed by an unusual problem: a cloudy look in oil from the 1993 and 1994 crops. Buyers in the cosmetics industry wanted to know if the unknown substance in the oil could possibly be toxic.

Isbell and coworkers found that the cloudy appearance was caused by a nontoxic wax. Their recommended processing changes saved meadowfoam growers about \$2 million in lost sales to the cosmetics industry, which has strict requirements for oils used in certain cosmetics.

ARS researchers, who began their studies of meadowfoam oil in the 1950's, discovered that the oil is 20 times more stable than soybean oil. That means it doesn't deteriorate as readily when exposed to air.

Isbell receives meadowfoam oil from the Oregon Meadowfoam Growers Association and the Fan-

ning Corporation, a maker of cosmetics oils, in Chicago, Illinois. Fanning and ARS have a cooperative research and development agreement to test the oil's usefulness in cosmetics.

Retired ARS chemist Kenneth Carlson in Peoria developed steps that could be used during processing to turn off an enzyme in meadowfoam seed that caused the oil to have a sulfurlike odor. Carlson's technology was successfully adopted and used by meadowfoam processors.

"While yields of meadowfoam are about 1,000 pounds per acre, we've seen improvements in the oil content, which has stabilized at about 30 percent," says Isbell.

This accomplishment occurred as the result of ARS-supported research performed by scientists in Oregon State University's plant breeding program. ARS funding and seed analysis thus helped boost meadowfoam oil production to the highest level in history.—By **Linda Cooke, ARS.**

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